IN THE UNITED STATES DISTRICT COURT

FOR THE DISTRICT OF OREGON

MOTIONLESS KEYBOARD COMPANY,

Plaintiff,

v.

MICROSOFT CORPORATION, NOKIA INC., and SAITEK INDUSTRIES, LTD.,

Defendants.

Civ. No. 04-180-AA

OPINION AND ORDER

James L. Buchal
MURPHY & BUCHAL
2000 S.W. First Avenue, Suite 320
Portland, OR 97201
Attorney for plaintiffs

J. Christopher Carraway
Jared S. Goff
KLARQUIST SPARKMAN, LLP
121 S.W. Salmon Street, Suite 1600
Portland, OR 97204
Attorneys for defendant Microsoft Corporation

Paul T. Fortino
Christopher L. Garrett
PERKINS COIE LLP
1120 N.W. Couch Street, Tenth Floor
Portland, OR 97209

Joseph W. Price
SNELL & WILMER LLP
1920 Main Street, Suite 1200
Irvine, CA 92614
Attorneys for defendant Saitek Industries, Ltd.

Christopher J. Lewis
SCHWABE, WILLIAMSON & WYATT, P.C.
Pacwest Center, Suites 1600-1900
1211 S.W. Fifth Avenue
Portland, OR 97204

Kenneth R. Adamo
Michael J. Newton
Daniel T. Conrad
JONES DAY
2727 North Harwood Street
Dallas, TX 75201
Attorneys for defendant Nokia Inc.

AIKEN, Judge:

Plaintiff filed suit for patent infringement under 35 U.S.C. § 283, alleging infringement of plaintiff's keyboard patents, United States Patent Nos. 5,178,477 (the '477 patent) and 5,332,322 (the '322 patent), by defendants' game controllers and mobile telephones. Plaintiff seeks permanent injunctive relief, damages, and attorney's fees.

On February 18, 2005, the court heard oral argument on the parties' cross-motions for summary judgment regarding infringement and defendants' motions for summary judgment of invalidity and anticipation. The court denies plaintiff's motions for partial

summary judgment and grants each defendant's motion for summary judgment of non-infringement. The court also grants defendants' joint motion for summary judgment of invalidity of the '477 and '322 patents. Defendants' remaining motions for summary judgment of invalidity and anticipation are denied.

FACTUAL BACKGROUND

Plaintiff is an Oregon corporation and the owner of the '477 and '322 patents through an assignment of rights from inventor and patentee Thomas L. Gambaro.

The '477 patent was filed on June 6, 1991 and issued on January 12, 1993. The '447 patent is entitled "Ergonomic Keyboard Input Device" and refers to a keyboard input device for transmitting information to an electronic system such as a computer. "More particularly, it relates to such a device wherein the keyboard is specially ergonomically designed with reference to the architecture of the human hand in such a fashion that, at least with respect to the fingers on the hand, only slight gestural finger motion is required for effective, multiple, differentiated key actuation." '477 Patent, Col. 1:8-14 (attached as Exhibit 1 to Amended Complaint, Exhibit 2 to the Declaration of Jared Goff (Goff Decl.), and Exhibit 2 to the Declaration of Keith B. Davis (Davis Decl.)).

The '322 patent was filed on January 11, 1993, issued on July 26, 1994, and is a continuation-in-part of the '477 patent. The

'322 patent is entitled "Ergonomic Thumb-Actuable Keyboard for a Hand-Grippable Device" and, like the '477 patent, refers to a keyboard input device for transmitting information to an electronic system such as a telephone switching system or a computer. "More particularly, it relates to such a device wherein the keyboard is specially ergonomically designed with reference to the architecture of the human hand in such a fashion that, at least with respect to the thumb on the hand, only slight gestural finger motion is required for effective, multiple, differentiated key actuation." '322 Patent, Col. 1:18-24 (attached as Exhibit 2 to Amended Complaint).

Defendant Microsoft Corporation (Microsoft) is a Washington corporation doing business in the state of Oregon. Microsoft develops and sells various computer and gaming-related products. Plaintiff alleges that three of Microsoft's game controllers infringe upon the '477 and the '322 patents. Specifically, plaintiff alleges that the "Strategic Commander" game controller infringes Claims 1, 2, 5, 6, and 8 of the '477 patent, and that the "Sidewinder Precision 2" and "Sidewinder Force Feedback 2" gaming joysticks (Sidewinder joysticks) infringe Claims 1, 2, 3, and 5 of the '322 patent.

Defendant Saitek Industries, Ltd. (Saitek) is a Delaware corporation doing business in the state of Oregon. Saitek develops and sells various gaming products, including joystick game

controllers. As with the Microsoft Sidewinder joysticks, plaintiff alleges that several models of Saitek joysticks infringe Claims 1, 2, 3, and 5 of the '322 patent.

Defendant Nokia Inc. (Nokia) is a Delaware corporation doing business in the state of Oregon. Nokia develops and sells various models of mobile telephones. Plaintiff alleges that four models of Nokia's phones, the 3560, 3595, 6200, and 6820, infringe Claims 1, 2, 3, and 4 of the '322 patent.

SUMMARY JUDGMENT STANDARD

Summary judgment is appropriate "if the pleadings, depositions, answers to interrogatories, and admissions on file, together with the affidavits, if any, show that there is no genuine issue as to any material fact and that the moving party is entitled to a judgment as a matter of law." Fed. R. Civ. P. 56(c). Summary judgment is not proper if material factual issues exist for trial. Warren v. City of Carlsbad, 58 F.3d 439, 441 (9th Cir. 1995). The moving party has the burden of establishing the absence of a genuine issue of material fact. Celotex Corp. v. Catrett, 477 U.S. 317, 323 (1986). If the moving party shows the absence of a genuine issue of material fact, the nonmoving party must go beyond the pleadings and identify facts which show a genuine issue for trial. Id. at 324.

Special rules of construction apply to evaluating summary judgment motions: (1) all reasonable doubts as to the existence of

genuine issues of material fact should be resolved against the moving party; and (2) all inferences to be drawn from the underlying facts must be viewed in the light most favorable to the nonmoving party. T.W. Electrical Service, Inc. v. Pacific Electrical Contractor Assoc., 809 F.2d 626, 630 (9th Cir. 1987). When different ultimate inferences can be reached, summary judgment is not appropriate. Sankovich v. Life Ins. Co. of N. America, 638 F.2d 136, 140 (9th Cir. 1981).

DISCUSSION

A patent confers upon its owner the right to exclude others from making, using, offering for sale, selling, or importing the patented invention throughout the United States during the term of the patent. 35 U.S.C. § 154(a)(1). In order for an invention to be patentable, it must be of patentable subject matter, useful, new, and nonobvious. Id. §§ 101, 103; Bonito Boats, Inc. v. Thunder Craft Boats, Inc., 489 U.S. 141, 150-51 (1989).

An infringement analysis involves two steps. Markman v. Westview Instruments, Inc., 52 F.3d 967, 976 (Fed. Cir. 1995) (*en banc*). First, the court construes the claim language and determines the scope of the patent claims asserted to be infringed without regard for the allegedly infringing product. Id.; Young Dental Mfg. Co. v. Q3 Special Prods., Inc., 112 F.3d 1137, 1141 (Fed. Cir. 1997). Second, the finder of fact determines whether the properly construed claims read on - or cover - the accused

infringing product or process, either literally or under the doctrine of equivalents. Markman, 52 F.3 at 976.

The court may use both "intrinsic" and "extrinsic" evidence to help construe a claim. Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1582 (Fed. Cir. 1996). Intrinsic evidence includes the language of the patent claim, the patent specification, and the prosecution history. Id.; Markman, 52 F.3d at 979.

Claim construction begins with the ordinary meaning of the claim language. Vitronics, 90 F.3d 1584; CCS Fitness, Inc. v. Brunswick Corp., 288 F.3d 1359, 1366 (Fed. Cir. 2002). "Absent an express intent to impart a novel meaning, claim terms take on their ordinary meaning." Elekta Instrument S.A. v. O.U.R. Sci. Int'l, Inc., 214 F.3d 1302, 1307 (Fed. Cir. 2000). Judges may rely on dictionary definitions if not inconsistent with definitions found in or ascertained through reading of the patent documents. Vitronics, 90 F.3d at 1584, n.6. A patentee, however, may choose to use a term in a manner other than its ordinary meaning, as long as the special definition of the term is clearly stated in the patent specification or file history. Hoechst Celanese Corp. v. BP Chems. Ltd., 78 F.3d 1575, 1578 (Fed. Cir. 1996).

The patent specification is a written description of the claimed invention and explains how to make or use it. 35 U.S.C. 112, ¶ 1. The specification is particularly helpful in claim construction because it describes the claims in context. C.R.

Bard, Inc. v. U.S. Surgical Corp., 388 F.3d 858, 864 (Fed. Cir. 2004); Microsoft Corp. v. Multi-Tech Sys., Inc., 357 F.3d 1340, 1347-48 (Fed. Cir.), cert. denied, 125 S. Ct. 61 (2004). Often the specification is dispositive in the claim construction analysis, as it "is the single best guide to the meaning of the disputed claim term." Vitronics, 90 F.3d at 1582.

The prosecution history of a patent is the record of exchange between the Patent and Trademark Office (PTO) and the patent applicant. Thus, it provides an accurate reflection of the patent's pre-issuance history. Markman, 52 F.3d at 980. It, like the specification and drawings, may be used to determine the scope of the claims. "The prosecution history gives insight into what the applicant originally claimed as the invention, and often what the applicant gave up in order to meet the [Patent] Examiner's objections." Lemelson v. General Mills, Inc., 968 F.2d 1202, 1206 (Fed. Cir. 1992); see also Middleton, Inc. v. Minn. Mining & Mfg. Co., 311 f.3d 1384, 1388 (Fed. Cir. 2002). Consequently, prosecution history is often relied upon for estoppel purposes. "Arguments and amendments made to secure allowance of a claim, especially those distinguishing prior art, presumably give rise to prosecution history estoppel." Wang Lab., Inc. v. Mitsubishi Elecs., 103 F.3d 1571, 1578 (Fed. Cir. 1997) (citation omitted).

If, after consideration of intrinsic evidence, genuine ambiguity remains as to the meaning of the claim language, the

court may consult extrinsic evidence to aid in its construction of the claim language. Vitronics, 90 F.3d at 1583. Extrinsic evidence consists of all evidence external to the patent and file history, including inventor and expert testimony. Id. at 1584.

Once the claims are construed, the trier of fact compares the patent claims to the accused device. International Rectifier Corp. v. Ixys Corp., 361 F.3d 1363, 1369 (Fed Cir. 2004). Infringement may be found only if "every element of the invention as claimed is present in the accused device." Acco Brands Inc. v. Micro Sec. Devices, Inc., 346 F.3d 1075, 1080 (Fed. Cir. 2003). There is no infringement, as a matter of law, if even a single claim limitation is missing from the accused device.

If an accused device does not literally infringe a patent, a patent holder may still show infringement under the doctrine of equivalents. Id. "The doctrine of equivalents expands the reach of claims *beyond* their literal language." Tate Access Floors, Inc. v. Interface Architectural Resources, Inc., 279 F.3d 1357, 1367 (Fed. Cir. 2002). Thus, "[i]nfringement under the doctrine of equivalents occurs when a claimed limitation and the accused product perform substantially the same function in substantially the same way to obtain substantially the same result." Business Objects, S.A. v. Microstrategy, Inc., 393 F.3d 1366, 1374 (Fed. Cir. 2005). Elements of equivalency must be presented "in the form of particularized testimony and linking argument." Lear Siegler,

Inc. v. Sealy Mattress Co., 873 F.2d 1422, 1426 (Fed. Cir. 1989).

I. The '477 Patent

The ‘477 patent discloses a keyboard designed in a manner to enable “slight gestural motion of different portions of a user’s fingers to effect appropriate key actuation.” ‘477 Patent, Col. 2:27-29. Specifically, the keyboard "is organized with an array of actuation keys that are disposed generally to complement the flayed underside architecture of a user's hand." '477 Patent, Preamble. Plaintiff alleges infringement of Claims 1, 2, 5, 6, and 8.

Claim 1 of the '477 patent describes:

> An ergonomic keyboard input device for the transmission of information by a human operator to an electronic system coupled with said device, comprising:
>
> > a keyboard organized with an array of transmission-actuation keys disposed generally to compliment the played underside-architecture of a users hand, said array including
> >
> > for each finger, a finger-associable cluster of input keys, each key in which is arranged facially to confront, in close proximity and in parallel planar relationship, one of various different, underside, finger-expanse portions of an associated, adjacent finger, thus to enable actuation of a selected one or more said keys in said cluster via only slight, gestural, relatively closing motion of the confronting corresponding finger-expanse portion, wherein each finger-associable cluster is elongate, and said keys therewithin are distributed along the length of the cluster with respective key-actuation axes that intersect normal to different angularly disposed planes, one plane for each key, which planes intersect one another along the length of the cluster in a mixed pattern of obtuse and reflex angles and

> for the thumb, a thumb-associable cluster of input keys disposed generally over three mutually intersecting surfaces to enable key actuation via mixed lateral and slight endo, translation of an associated adjacent thumb within, generally, a cone of motion whose apex resides adjacent the base of the thumb.

'477 Patent, Col. 7:45-68, 8:1-6.

Claim 2 describes the device of Claim 1, "wherein said clusters extend generally radially from a region of confluence, and said device further comprises a convex, mound-like palm rest structure located adjacent said region." Id. Col 8:7-10.

Claim 5 describes the device of claim 1, with the added limitation of a base "wherein at least some of said clusters are mounted on said base for selective, relative positional adjustment." Id. Col. 8:29-32. Claims 2 and 5 are thus dependent claims which rely on and incorporate independent Claim 1.

Claim 6 describes the device of Claim 1, except that it does not require the planes of the finger clusters to intersect one another "in a mixed pattern of obtuse and reflex angles" and adds to the cluster feature "a base, wherein at least some of said clusters are mounted on said base for selective relative positional adjustment," as disclosed in Claim 5. Id. Col. 8:33-58.

Claim 8 describes the device of Claim 6, "wherein said clusters extend generally radially from a region of confluence, and said device further comprises, a convex, mound-like palm-rest structure located adjacent to said region." Id. Col. 8:62-65.

Thus, Claim 8 is a dependent claim which relies on and incorporates independent Claim 6.

A. Claim Construction

1. A Thumb-Associable Cluster of Input Keys Disposed Generally Over Three Mutually Intersecting Surfaces

Microsoft argues that this phrase should be construed to mean that the thumb keys must be disposed over three distinct surfaces, with each surface sharing an intersection with the other two surfaces, and that "the keys of the thumb cluster cannot be in a uni-planar array," i.e., on one planar surface. Microsoft's Memorandum in Support of Non-Infringement of '477 Patent, p. 11. Plaintiff does not contest Microsoft's proposed construction or offer an alternative construction for this phrase.

I agree that the claim language does not refer to a device with the thumb keys located on one generally planar surface; rather, the three surfaces must "mutually intersect." "Mutual" means "shared in common." See Goff Decl., Ex 8 (Wester's Ninth New Collegiate Dictionary, p. 783). Further, the patent specification describes the surfaces of the clusters as forming a "keyboard sub-amphitheater" as depicted in Figure 1; this corner formation is distinct from a "uni-planar" surface. See '477 Patent, Col. 4:19-23 and Figures 1, 2, 6.

Notably, during prosecution of the '447 patent, the PTO rejected certain claims of the '477 patent as indefinite. Goff

Decl., Ex. 3, pp. 2-3.[1] Specifically, the PTO found that the term "three mutually intersecting surfaces" was indefinite, because it was "recited in an inferential manner, there being no positive recitation of three surfaces and the manner in which they intersect." Id. at Ex. 3, p. 2. In response, Gambaro emphasized "that claims are read in light of the specification, including any drawings" and argued that "it is abundantly clear what is meant by three mutually intersecting surfaces by brief reference to Fig. 1 and the description of surfaces 34a, 34b, 34c of thumb key sub-amphitheater 34." Id. at Ex. 4, p. 9. As noted above, the patent specification and drawings describe and depict a corner formation housing the thumb key clusters.

Plaintiff contends that prosecution estoppel applies only when the applicant offers an amendment to the patent claims, but not when an applicant provides an explanation or clarification to the PTO. Plaintiff is incorrect. "Just as prosecution history estoppel may act to estop an equivalence argument under the doctrine of equivalents, positions taken before the PTO may bar an inconsistent position on claim construction under § 112, ¶ 6." Alpex Computer Corp. v. Nintendo Corp. Ltd., 102 F.3d 1214, 1221 (Fed. Cir. 1996); see also Elkay Mfg. Co. v. Ebco Mfg. Co., 192 F.3d 973, 979 (Fed. Cir. 1999) ("Arguments made during the

[1]Additional claims were rejected as unpatentable in light of prior art. Goff Decl., Ex. 3, pp. 4-5.

prosecution of a patent application are given the same weight as a claim amendment . . . . [It] is irrelevant whether [the patentee] relinquished [a] potential claim construction in an amendment to the claim or in an argument to overcome or distinguish a reference"). Therefore I find that Gambaro's representations to the PTO narrow the scope of the claim language.

Finally, the PTO also found that the '477 claims were not patentable over the prior art Malt keyboard, United States Patent No. 4,244,659. In response, Gambaro distinguished the Malt keyboard as having thumb keys placed in a "uni-planar array," rather than "disposed over three mutually intersecting surfaces" as recited in Claim 1 of the '477 patent. Goff Decl., Ex. 4, p. 15. "[A] concession made or position taken to establish patentability in view of prior art on which the examiner has relied, is a substantive position on the technology for which a patent is sought, and will generally generate an estoppel." Pall Corp. v. Micron Separations, Inc., 66 F.3d 1211, 1220 (Fed. Cir. 1995).

Accordingly, I construe this claim to mean that the thumb key clusters must be spread over three distinct and separate surfaces, with each surface sharing an intersection with the other two surfaces.

2. For Each Finger, a Finger-Associable Cluster of Input Keys

Microsoft argues that this phrase should be construed to mean that "for each of the four (non-thumb) fingers of the hand, the

device includes a separate group of multiple input keys for use by the associated finger." Microsoft's Memorandum in Support of Non-Infringement of '477 patent, p. 14. Microsoft further maintains that the term "cluster" requires at least two keys for each finger, and the term "each finger" means each finger of each hand, i.e., a two-handed device.

Plaintiff contests Microsoft's construction that the device must be designed for two hands and argues that the claim language does not include such a limitation. I agree. While Microsoft relies on the preferred embodiment depicting a two-handed keyboard, the court "must use the written description for enlightenment and not to read a limitation from the specification." Playtex Prods., Inc. v. Procter & Gamble Co., 400 F.3d 901, 906 (Fed. Cir. 2005) I find that the claim language and the specification neither require nor exclude a one-handed embodiment.

Otherwise, plaintiff does not contest Microsoft's proposed construction, and I find it consistent with the plain language of the claim and the patent specification. See Col 1:4-18, Figures 1, 3. Thus, I construe the claim language to mean that for each of the four fingers, the device must include a separate group of multiple input keys that correspond to the associated finger.

3. Each Key in Which is Arranged Facially to Confront, in Close Proximity and in Parallel Planar Relationship, One of Various Different, Underside, Finger-Expanse Portions of an Associated, Adjacent Finger

Microsoft argues that this phrase should be construed to mean

that "each key of each non-thumb finger cluster must be positioned to face in close proximity and be parallel to the tip or the underside of the adjacent finger of a user." Microsoft's Memorandum in Support of Non-Infringement of '477 patent, p. 15. In other words, Microsoft argues that "[t]he cluster cannot be disposed along a uniform curved convex surface." Id.

Microsoft maintains that the ordinary meaning of the term "confront" requires that each key face and be parallel to the "finger expanse portions," i.e., the underside, of the corresponding finger. Goff Decl., Ex. 7 (American Heritage Dictionary of the English Language, 4th Ed., p. 387). Microsoft further contends that the key clusters cannot be arranged along a uniform convex surface, because the underside of each finger must "alternate[] between various angles" to correspond with the keys. See '477 Patent, Figure 8.

Plaintiff disputes Microsoft's construction and argues that "[d]evices embodying the invention may or may not have a uniformly curved convex surface, but must have the keys oriented to confront, in parallel planar relationships, two or more portions of the underside of the fingers." Plaintiff's Opposition to Defendants' Motions for Summary Judgment, p. 30. Put simply, plaintiff contends that the claim language encompasses keys placed on a uniform, convex surface so long as the keys correspond with the underside of the associated finger.

It is true that plaintiff is entitled to all reasonable constructions of the claim language; however, the construction must be consistent with the claim language and the description of the invention in the specification. Here, the claim language requires that keyboard be designed to correspond with the "underside architecture of the hand." Id. Col. 4:26-27. Further, the specification describes the keyboard portion as "a sort of curvilinear keyboard amphitheater," depicted in the specification drawings. See '477 Patent, Col. 3:47-48, Figures 1-4. Notably, the specification drawings shown in Figures 1, 3, 4, 7, and 8 show a concave corner housing with keys placed in varying angles to conform to the underside and tip of the corresponding finger. See also '477 Patent, Col. 3:13-18 (Figures 7 and 8 illustrate "the nominal position of a user's finger with respect to this structure" and the "different gesture motions used by a finger").

Additionally, the specification explains that along the length of a key cluster, the planar surfaces supporting the keys "intersect one another" as detailed in Figure 3. '477 Patent, Col. 5:8-12, Figure 3. "[T]he keys mentioned above in cluster 26 may be thought of as having actuation axes, respectively, which intersect normally the respective underlying support planed provided for the keys." Id. Col. 5:36-39. Thus, the claim language and specification describes a corner sub-amphitheater housing keys placed in intersecting planes and excludes a uniform, convex

surface.

Finally, plaintiff's construction extending to a convex surface is contrary to Gambaro's representations to the PTO. As established by defendants' submissions, Gambaro unambiguously disavowed that a uniform convex curved surface was claimed by the '477 patent. Specifically, Gambaro distinguished several prior art keyboard references containing key clusters that were "uniformly curvilinearly convex in two orthogonal axes" and not "arranged in a cluster to confront 'in close proximity and in parallel planar relationship' an associated finger-expanse portion." Goff Decl., Ex. 4, pp. 13-14. Gambaro stated: "Nothing could be further from what applicant claims as his invention" and directed the PTO to Figures 7 and 8 for clarification. Id. Ex. 4, p. 14.

Plaintiff argues that Gambaro merely explained to the PTO that the Malt keyboard did not include the claimed element of keys arranged to confront the underside of the finger as opposed to the tip, but that Gambaro's clarifications cannot invoke prosecution estoppel. Plaintiff is incorrect. Gambaro did not merely clarify the elements of his invention; he specifically distinguished prior art in order to secure issuance of the patent. Southwall Techs., Inc. v. Cardinal IG Co., 54 F.3d 1570, 1583 (Fed.Cir.1995) ("Clear assertions made during prosecution in support of patentability, whether or not actually required to secure allowance of the claim, may also create an estoppel."). For example, Gambaro explained

that the importance of the cluster limitation was to correspond with the underside of the finger, "an important distinction over prior art keyboards, the structure of which enable only the traditional fingertip keystroking . . . ." Goff Decl., Ex. 4, p. 14 (emphasis added). Prosecution estoppel thus precludes plaintiff from claiming that the claim language encompasses devices with a uniformly convex surface. See Wang Lab., Inc., 103 F.3d at 1578 (arguments distinguishing prior art made during prosecution of patent "presumably give rise to prosecution history estoppel").

Accordingly, I construe the phrase to mean that each key of each finger cluster must be positioned parallel and in close proximity to the tip and the underside of the adjacent finger, and that the clusters be disposed along a concave surface.

4. Each Finger-Associable Cluster is Elongate, and Said Keys Therewithin are Distributed Along the Length of the Cluster With Respective Key-Actuation Axes That Intersect Normal to Different Angularly Disposed Planes, One Plane for Each Key, Which Planes Intersect One Another Along the Length of the Cluster in a Mixed Pattern of Obtuse and Reflex Angles

Microsoft argues that this phrase should be construed to mean that for each cluster of finger keys, "the angles between the adjacent keys [must] alternate between an obtuse angle (between 90 and 180 degrees) and a reflex angle (greater than 180 degrees)," and that for each finger there must be at least two alternating angles between three keys. Microsoft's Memorandum in Support of Non-Infringement of '477 patent, p. 18. Plaintiff offers no alternative construction for this phrase and does not contest

Microsoft's proposed construction. The ordinary meaning of the claim terms require that the planes of each key intersect one another in a "mixed" pattern of obtuse and reflex angles. This pattern would include one reflex angle and one obtuse angle, with two angles between three keys. Microsoft's construction is further supported by the specification drawings. See '477 Patent, Figures 3-8. Therefore, I adopt Microsoft's construction as set forth above.

5. At Least Some of Said Clusters Are Mounted on Said Base for Selective, Relative Positional Adjustment

Microsoft argues that this phrase should be construed to mean that the keys or the keys clusters must be mounted in a way that allows the keys or the clusters "to be moved by the user to different locations relative to each other to fit different hand sizes." Microsoft's Memorandum in Support of Non-Infringement of '477 patent, p. 21. Plaintiff does not contest Microsoft's construction or offer an alternative one. Rather, plaintiff argues that the plain language of the claim does not require that the keys or key clusters be adjusted to accommodate different hand sizes. I disagree.

The claim language discloses key clusters "mounted . . . for selective, positional adjustment"; thus, the plain meaning of the terms require that the keys be attached in a manner that allows them to be adjustable. Further, the specification gives context to this claim language:

> The kind of positional adjustment which has just been described may, in a certain way, be viewed as a gross adjustment - namely, one wherein entire clusters of keys are shifted as a unit to accommodate different hand sizes. . . . For example, one can imagine a modification in which . . . the mounting structure could actually be a divided structure which permits relative positional adjustment between . . . the two keys closet closest to the tip of the associated finger as a unit with respect to the other two keys in the row.

'477 Patent, Col. 6:53-64.

Whatever this means, it is clear that the keys or key clusters must be adjustable in relation to one another. Microsoft also relies on the patent specification, which describes the purpose of allowing adjustment of the keys or the key clusters to fit different hand sizes:

> Recognizing that a one-size-fits-all approach may not be entirely appropriate to deal with users' hands that are significant larger or smaller than, say, hands fitting within the 'median' of hand sizes, the structure of the invention proposed herein permits positional adjustment of arrays and clusters of keys to accommodate a size-differential concern.

'477 Patent, Col 2:46-53; see also Col. 6:42-43, 52-63.

Thus, I find that Microsoft's construction reflects the plain meaning of the language and the description of the claimed element in the specification. Accordingly, I construe this claim element to mean that keys or key clusters must be mounted on a base so as to allow for selective adjustment of the keys or key clusters to accommodate different hand sizes.

B. Infringement

Microsoft's Strategic Commander is a convex-shaped hand rest

mounted on a base. The hand rest includes three pairs of "number" keys and one "rocker" key for the fingers placed on a sloped top surface, with three thumb keys located on a curved side surface. See Goff Decl., Ex. 11; Physical Ex. C. Microsoft argues that five required features of the '477 Patent are not found in the Strategic Commander, and that plaintiff therefore cannot establish either literal infringement or infringement under the doctrine of equivalents.

1. Three Mutually Intersecting Surfaces

First, Microsoft argues that the Strategic Commander does not infringe any claim of the '477 patent, because its thumb keys are not found on "three mutually intersecting" surfaces as described in Claims 1 and 6, on which Claims 2, 5, and 8 depend. Plaintiff concedes that the Strategic Commander does not literally infringe element. Rather, plaintiff relies on the doctrine of equivalents and argues that the thumb keys of the Strategic Commander are the functional equivalent of the thumb keys described in the '477 patent, because "the curvature of [the side] surface" is such that each key is in a different plane, forming the functional equivalent of "three mutually intersected surfaces." Plaintiff's Memorandum in Opposition to Defendants' Motions for Summary Judgment, p. 29; Transcript of Proceedings, p. 62 (February 18, 2005).

Even if the court agreed that the side surface of the Strategic Commander is curved so that each thumb button is an a

different "plane," the requirement of "mutually intersecting surfaces" is not met, because plaintiff fails to establish that the planes for the thumb keys share a common, i.e., mutual, intersection. See Goff Decl., Exs. 11, 12. Plaintiff bears the burden of presenting evidence to show that the Strategic Commander thumb keys perform substantially the same function in substantially the same way to achieve substantially the same result as keys disposed over three mutually intersecting surfaces. V-Formation, Inc. v. Benneton Group SpA, 401 F.3d 1307, 1313 (Fed. Cir. 2005). Plaintiff presents no evidence to meet this burden.

Furthermore, prosecution estoppel bars application of the doctrine of equivalents. As discussed with respect to claim construction, Gambaro distinguished prior art keyboard references with thumb keys "in a uni-planar array" rather than dispersed over "three mutually intersecting surfaces." See Goff Decl., Ex. 4, pp. 15-16; Eagle Comtronics, Inc. v. Arrow Comm. Labs., Inc., 305 F.3d 1303, 1316 (Fed. Cir. 2002) (explaining that prosecution history estoppel bars a patentee from asserting as an equivalent subject matter surrendered by argument during prosecution of the patent application). Gambaro also relied on the claim requirement of a "mixed pattern of angles" in distinguishing the prior art with an "uni-planar array." Goff Decl., Ex. 4, p. 14; Ex. 6, p. 9.

Finally, Gambaro directed the PTO to the specification drawings in response to indefiniteness and obviousness objections.

Irdeto Access, Inc. v. Echostar Satellite Corp., 383 F.3d 1295, 1302-03 (Fed. Cir. 2004) (relying on specification in responding to indefiniteness challenge limits the claim to the content relied upon). Gambaro explained that the claims were to be read in context of the specification and drawings and clarified that "mutually intersecting surfaces" were depicted in figures showing a "thumb key sub-amphitheater." Goff Decl., Ex. 4, p. 9. Because Gambaro "unequivocally directed the patent examiner, as well as the public, to the specification as the as the complete source of meaning for the disputed terms," plaintiff is bound by those representations. Irdeto Acces, Inc., 383 F.3d at 1302-03.

Plaintiff admits that Gambaro's representations to the PTO during the '477 patent prosecution "might well forbid plaintiff from charging infringement based upon devices whose surfaces were quite dissimilar" from the '477 patent; nevertheless, plaintiff argues that the surfaces of the Strategic Commander are "similar enough." Plaintiff's Reply Memorandum in Support of Supplemental Motion for Summary Judgment, p. 14. The doctrine of equivalents, however, is not met by mere or adequate similarly; the claimed limitation and the accused product must "perform substantially the same function in substantially the same way to obtain substantially the same result." V-Formation, Inc., 401 F.3d at 1313. Further, "[t]he determination of equivalence should be applied as an objective inquiry on an element-by-element basis." Warner-

Jenkinson Co. v. Hilton Davis Chem. Co., 520 U.S. 17, 40 (1997). Thus, a conclusory assertion of equivalence is insufficient to establish a genuine issue of material fact. Hewlett Packard Co. v. Mustek Systems, 340 F.3d 1314, 1322-23 (Fed. Cir. 2003).

Not only does plaintiff fail to establish substantial similarities between the patented and accused device, plaintiff fails to offer a compelling argument why prosecution estoppel does not bar its reliance on doctrine of the equivalents. "[T]he reason for the limitation is to prevent the patentee from obtaining under the doctrine of equivalents coverage it could not have obtained from the [PTO] by literal claims." Marquip, Inc. v. Fosber Am., Inc., 198 F.3d 1363, 1367 (Fed. Cir. 1999). Therefore, plaintiff cannot now expand the scope of this claim language and argue that the curved side surface of the Strategic Commander is the functional equivalent of "three mutually intersecting" surfaces.

2. Multiple Keys for Each Finger

Second, Microsoft argues that the Strategic Commander lacks multiple keys for each finger as recited in Claim 1. Although the Strategic Commander includes a pair of keys for three fingers, it has only one rocker switch for the remaining finger. Plaintiff concedes that there is no literal infringement of this element. Instead, plaintiff argues that the Strategic Commander has the functional equivalent of multiple keys for each finger, because the rocker key performs the function of two keys.

Microsoft responds that application of the doctrine of equivalents would "vitiate" the requirement of "clusters" as multiple keys and therefore violate the principle known as the"all-elements rule." Asyst Tech., Inc. v. Emtrak, Inc., 402 F.3d 1188, 1195 (Fed. Cir. 2005). "It is important to ensure that the application of the doctrine, even as to an individual element, is not allowed such broad play as to effectively eliminate that element in its entirety." Warner-Jenkinson Co., 520 U.S. at 29. Based on the record before me, I cannot find as a matter of law that the claimed element of "cluster" would be eliminated by application of the doctrine of equivalents. The rocker switch is hourglass shaped, with each portion of the key potentially performing a different function.

Nonetheless, plaintiff fails to meet its burden of establishing "insubstantial differences" between the claimed cluster for each finger and the rocker switch. See Texas Instruments Inc. v. Cypress Semiconductor Corp., 90 F.3d 1558, 1566 (Fed. Cir. 1996) ("objective evidence rather than unexplained subjective conclusions" is relevant to determine whether the differences between the accused product or process and the claimed invention are insubstantial). Here, plaintiff presents no evidence of equivalence other than demonstrating the accused joystick for the court. Therefore, plaintiff fails to establish infringement of this claim requirement under the doctrine of equivalents.

3. Mixed Pattern of Angles Corresponding to the Underside of the Associated Finger

Third, Microsoft argues that there is no infringement of any claim, because the Strategic Commander displays its finger cluster keys on a uniformly convex surface rather than parallel and in close proximity to the tip and the underside of the adjacent finger. Plaintiff argues that literal infringement is established because the claim language encompasses a convex surface. However, the court's construction of the claim excludes devices with key clusters disposed over a convex surface, based on the description contained in the specification and depicted in the drawings. Therefore, plaintiff cannot rely on literal infringement.

Likewise, plaintiff cannot establish infringement of this elements under the doctrine of equivalents, because Gambaro distinguished prior art references and unambiguously disavowed that a uniform convex surface fell within the claim limitations. Goff Decl., Ex. 4, pp. 13-15. Thus, plaintiff cannot read into its claims what Gambaro previously distinguished to obtain the patent. Marquip, Inc., 198 F.3d at 1367.

4. The Planes of Each Key Intersecting One Another in a Mixed Pattern of Obtuse and Reflex Angles

Fourth, Microsoft argues that there can be no infringement of Claims 1, 2, and 5, because none of the finger clusters on the Strategic Commander contain three keys dispersed in a mixed pattern of obtuse and reflex angles. Plaintiff concedes that the Strategic

Commander has only two keys per finger cluster, and that the rocker key is not a cluster. Nevertheless, plaintiff argues that "[t]he limitation is, however, present when one considers the shape of the two keys, which are associated with four planes of actuation." Plaintiff's Memorandum in Opposition to Defendants' Motions for Summary Judgment, p. 30. If plaintiff intends to argue literal infringement, plaintiff's argument fails in light of the court's construction of the claim as meaning three keys in each cluster. Moreover, the planes of the finger keys in the Strategic Commander do not intersect one another in a mixed pattern of angles. I thus view plaintiff's argument as relying on the doctrine of equivalents.

However, plaintiff fails to present evidence that substantial similarities exist between the claimed key cluster and the keys of the Strategic Commander. Moreover, application of the doctrine of equivalents to cover the Strategic Commander would vitiate these elements of the claim. Each key "cluster" of the Strategic Commander has no more than two keys and none of the planes underlying the keys intersect each other or are arranged in a mixed pattern of angles. Warner-Jenkinson Co., 520 U.S. at 29. Finally, prosecution estoppel precludes reliance on the doctrine of equivalents, because Gambaro amended the '477 patent claims to include key clusters placed so that the planes of each key intersect each other in a mixed pattern of angles, and Gambaro

relied on this amendment in distinguishing prior art. Goff Decl., Ex. 6, pp. 1-2, 9. Eagle Comtronics, 305 F.3d at 1315-16. Therefore, plaintiff cannot rely on the doctrine of the equivalents to establish infringement of this claim element.

5. Adjustable Finger Keys

Fifth, Microsoft argues that there is no infringement of Claims 5, 6, and 8, because the Strategic Commander does not have adjustable keys or key clusters to meet the "selective, positional adjustment" limitation of the claim. Plaintiff asserts literal infringement and does not rely on the doctrine of equivalents for this claim element. See Plaintiff's Memorandum in Opposition to Defendants' Motions for Summary Judgment, p. 30.

The claim language requires a base on which key clusters "are mounted for selective positional adjustment"; thus, the keys or the key clusters must be adjustable to fit different hand sizes. The Strategic Commander does not literally infringe this claim element, because the keys cannot be adjusted to accommodate different hand sizes. Rather, the keys are mounted in a fixed position on the hand rest, which moves slightly over the base.

Even if argued by plaintiff, the doctrine of equivalents is equally unavailing because it would vitiate the requirement of adjustable keys or key clusters; this element is lacking completely in the Strategic Commander. Moreover, plaintiff presents no evidence that the differences between the claim element and the

Strategic Commander are insubstantial, or that they perform substantially the same function, in substantially the same manner, with substantially the same result. See V-Formation, Inc., 401 F.3d at 1313. Plaintiff suggests that equivalence is established, because the base of the Strategic Commander is movable. However, plaintiff cannot rely on conclusory arguments and must present objective evidence of equivalence.

In sum, I find that plaintiff fails to present evidence or raise a genuine issue of fact that Microsoft's Strategic Commander infringes Claims 1, 2, 5, 6 or 8 of the '477 patent.[2]

II. The '322 Patent

The '322 patent is directed to a keyboard input device that is ergonomically designed for hand-held use, with a grippable portion held by the fingers and a key arrangement within a concavity for selective actuation of individual keys by the thumb. See '322 Patent, Figures 1-3.

Plaintiff alleges that the Microsoft Sidewinder and Saitek joysticks infringe Claims 1, 2, 3, and 5 of the '322 patent, and

[2]Microsoft also notes that in response to Nokia's argument regarding invalidity, plaintiff construed the term "cluster" to mean "a two-or-three dimensional 'bunch' of objects" rather than a single row of keys. Plaintiff's Memorandum in Opposition to Defendants' Motions for Summary Judgment, p. 9. Given that the '322 patent is a continuation-in-part of the '477 patent, the term "cluster" would have the same meaning. If cluster is so construed, the Strategic Commander does not contain a "cluster" of keys, because its keys are displayed in a single row. Although I need not decide this issue, Microsoft's argument, if accepted, provides an additional basis for non-infringement.

that four models of Nokia mobile phones infringe Claims 1, 2, 3 and 4 of the '322 patent.

Claim 1 describes:

> A handheld device for entering information into an electronic system via a keyboard, the device comprising:
>
> a housing having a grippable portion which permits the device to be held in one hand with the thumb free to move at least temporarily to a predetermined key-actuation position while the device is held,
>
> a concavity in said housing at said key-actuation position, and
>
> a thumb-associable cluster of keys forming a keyboard within said concavity, each of the plurality of keys in said cluster being selectively actuable via mixed lateral and slight endo, translation of a thumb within said concavity, whereby information is entered into an electronic system.

'322 Patent, Col. 8:16-31.

Claim 2 describes: "A device as in claim 1 in which said keys are located in said concavity within a cone of motion of a user's thumb, when the thumb is positioned is said concavity, whose apex resides adjacent to the base of the thumb." Id. Col 8:32-36.

Claim 3 describes: "A device as in claim 1 wherein said cluster of keys includes individual keys oriented in planes which are angularly offset from one another to permit selective actuation by said mixed lateral, and slight endo, translation of a thumb positioned in said concavity." Id. Col. 8:37-41.

Claim 4 describes:

> A device as in claim 1 in which said concavity in said housing includes wall surfaces for supporting individual keys in said cluster in orientations which are angularly offset from one another, including a distal wall which angles downwardly into said concavity and supports a plurality of distal keys arrayed generally radially about the tip of a thumb when positioned in said concavity, a proximal wall which angles downwardly into said concavity and supports a plurality of proximal keys arranged generally radially about the first phalanx of a thumb when positioned in said concavity, and a plurality of medial wall surfaces supporting a plurality of medial keys in orientations which partially surround the interphalangeal joint of a thumb when positioned in said concavity.

Id. Col. 8:42-56.

Finally, Claim 5 describes:

> A device as in claim 1, in which said grippable portion is a handle which can be gripped between the fingers and thenar eminence of a user's hand, whereby when the device is gripped thus, the user's thumb is selectively movable into said concavity without the user losing a grip on the device.

'322 Patent, Col 8:57-62. Claims 2, 3, 4 and 5 are thus dependent claims which rely upon and incorporate by reference independent Claim 1.

A. Claim Construction

1. A Hand-Held Device . . . Comprising a Housing Having a Grippable Portion Which Permits the Device To Be Held in One Hand With the Thumb Free

Microsoft argues that this phrase should be construed to mean that the "device must be designed to be used while it is supported by the one hand that is doing the gripping and that has the thumb which actuates the keys during normal operation." Microsoft's

Memorandum in Support of Motion of Non-Infringement, p. 15.[3] Saitek proposes a similar construction: "[A] device that is designed to operate and function properly when held and carried in one hand and not simply a device on which a hand can be placed." Saitek's Memorandum in Support of Motion for Non-Infringement, p. 6. Nokia agrees that the claim language should be construed to mean a device that is operable while held in one hand.

Plaintiff argues that "hand-held" means a device with a "grippable" housing, and that the claim language covers a grippable device attached to a larger piece of machinery, i.e., a joystick. In other words, plaintiff argues that the claim language does not require the device to be operable while held in one hand.

Defendants argue that plaintiff's construction essentially would render the meaning of "hand-held" the same as "grippable." I agree. The subject matter claimed is described as "a housing having a grippable portion which permits the device to be held in one hand . . . ." '322 Patent, Col. 8:19-20. In the context of this language, the terms have different meanings. Unless otherwise specified, claim terms should be construed to give different meanings to different terms. CAE Screenplates, Inc. v. Heinrich Fiedler GmbH Co., 224 F.3d 1308, 1317 (Fed. Cir. 2000) (In the absence of any evidence to the contrary, we must presume that the

[3]Microsoft also proffered a construction for the term "key"; however, I do not find construction of this term necessary to resolve the issues before the court.

use of these different terms in the claims connotes different meanings."); see also Wright Med. Tech. v. Osteonics Corp., 122 F.3d 1440, 1444 (Fed. Cir. 1997). Moreover, defendants' construction is consistent with the ordinary meaning of hand held: "compact enough to be used or operated while being held in the hand or hands." Goff Decl., Ex. 7 (American Heritage Dictionary, 4th Ed., p. 795). Thus, the claim language requires a grippable housing so that the device - as a whole - can be held in one hand while operated.

Defendants' proposed constructions are supported further by the patent specification. The preamble to Claim 1 describes "a hand-held device for entering information into an electronic systems via a keyboard" suggesting that the claim is limited to devices that allow for the input of information while being held in one hand. See Pitney Bowes, Inc. v. Hewlett-Packard Co., 182 F.3d 1298, 1306 (Fed. Cir. 1999) (the preamble is "necessary to give life, meaning, and vitality" to the claim). The specification also describes the invention as "devices to be gripped and held," contrary to plaintiff's argument that the term "hand-held" means the same as "grippable":

> Hand-held devices, particularly devices designed to be gripped and held in one hand, are made for a variety of tasks. A portable telephone, such as a cellular telephone, is an example of a hand-held device designed to be gripped and held in one hand and which includes a keyboard information entry system.

'322 Patent, Col. 1:27-33 (emphasis added), Figures 1 and 2. The

specification also emphasizes the advantage of a device that is held and operated with a single hand:

> Because portable telephones are sometimes used by a person engaged in an activity which requires more or less continuous use of the hand which is not holding the telephone, such as driving a car, the ability to both grip a portable telephone and operate its keyboard with a single hand would be useful.

Id. Col 1:33-38 (emphasis added).

Plaintiff relies on one potential embodiment described in the specification as a device that could be "a control stick on a larger piece of machinery." '322 Patent, Col. 7:51-53, Figure 7. As noted by defendants, this example is the only one in the specification that is not described as "hand-held." Id. Col. 7:47-63, Col. 8:1-4. Claims need not be construed to cover all alternative embodiments described in the patent specification. Cf. Elekta Instrument S.A., 214 F.3d at 1308-09 (affirming claim construction even though it excluded preferred and only embodiment disclosed in the specification). Regardless, I find that one statement cannot overcome unambiguous claim language and the description contained in the specification.

Thus, I adopt defendants' proposed constructions and construe this language to mean that the device must have a grippable portion so that the device is operable when gripped and held in one hand.

2. A Concavity in Said Housing at Said Key-Actuation Position and a Thumb-Associable Cluster of Keys Forming a Keyboard Within Said Concavity

Microsoft argues that the phrase "concavity in said housing"

means that the "housing of the device must include a region that is bowl-shaped (i.e., sunk below the surrounding margin)," and that "a keyboard within said concavity" means that "all of the keys of the keyboard are contained entirely within the space defined by the concavity, so that the keyboard does not extend beyond the concavity," Microsoft's Memorandum in Support of Motion for Summary Judgment of Non-Infringement, pp. 10, 12.

Saitek proffers a similar construction for this phrase: "An area sunk below a surface of the housing" with "a set of keys contained entirely within an area sunk below a surface of the housing." Saitek's Memorandum in Support of Motion for Summary Judgement of Non-Infringement, p. 9, 14.

Nokia argues that "concavity" means "a bowl-like depression in the housing," and that "a keyboard within said concavity" means that keys are mounted "inside" the concavity, not that they "form the concavity." Nokia's Memorandum in Support of Motion for Summary Judgment of Non-Infringement, p. 11.

Plaintiff originally proffered the following construction: "Concavity means a hollowed or indented region extending along one or two axes." Supplemental Declaration of James Stewart, Ex. 1, p. 7. However, in opposing defendants' motions, plaintiff expanded its construction of this phrase: "Concavity . . . refers to a hollow or opening in or on the outer surface of a device, containing keys. A concavity can be formed by the tops of keys

when the tops of such keys are arranged in an angularly offset manner. A planar surface surround by a rim is not a 'concavity' in the housing." Plaintiff's Memorandum in Opposition to Defendants' Motions for Summary Judgment, p. 34.

Plaintiff seemingly offers alternative constructions, because they set forth incompatible meanings of "concavity in said housing" and "keyboard within said concavity." One proposed construction defines concavity as a concave "hollow" or opening in which a keyboard is placed, and the other defines concavity as a bowl-shaped area formed by the top of the keyboard or keypad.

Plaintiff's proposed constructions are at odds with a basic tenet of patent law - that claims are to be construed without regard to the accused device. Young Dental Mfg. Co., 112 F.3d at 1141. Notwithstanding the fact that the construction of claims is not a moving target that varies to correspond with a patentee's infringement allegations, I find that neither of plaintiff's constructions are supported by the plain language of the claim, the '322 patent specification, or the prosecution history.

The plain and ordinary meaning of the term "concavity," originating from "concave," is rounded or curved, like the inside of a bowl or sphere. Therefore, the claim language requires a bowl-like depression in the housing of the device. See Goff Decl., Ex. 7, p. 5 (American Heritage Dictionary, 4th Ed., p. 380); Ex. 8, (Webster's Ninth New Collegiate Dictionary, p. 271); Davis

Decl., Ex. 10 (same). Plaintiff does not dispute that concavity means a depression or indentation. Rather, plaintiff argues that the claim language encompasses either a "concavity" formed by the tops of the keys or an opening in the housing for the keyboard.

However, the claim language requires that the concavity be "in" the device housing. "In" should need no definition; it means "within the limits, bounds or area of"; i.e., "not out." American Heritage Dictionary, 2d Ed., p. 648. Thus, for the concavity to be in the housing, it must be within the limits or area of the housing, or formed by or form a part of the housing. Although a concavity construed an opening or "hollow" in the device could be contained "in" the device housing, a concavity formed by the keyboard could not. The concavity cannot be "in" the housing if it is in the keys or keyboard.

Further, the plain language of the claim requires that the keyboard be "within" the concavity. "Within" means "inside the limits of" or "enclosed." Goff Decl., Ex. 8 (Webster's Ninth New Collegiate Dictionary, p. 1355). The keyboard cannot be "within" the concavity if it is the tops of the keys or the keyboard that forms the concave surface. Thus, if the court construed "concavity" to include a depression formed by the tops of the keys or the keyboard, the claim limitations that require the concavity to be "in" the housing and the keyboard to be "within" the concavity would have no meaning.

The patent specification also describes keys positioned "in a concavity or depression" in the housing and illustrates the concavity as a bowl-like depression in the housing the device. '322 Patent, Col. 4:58-60. The specification makes no reference to a concavity formed by the keys of the keyboard, and no specification drawing suggests that the keys or keyboard form the claimed concavity. Id. Col. 3:18-23; Col. 4:58-62, 65-67; Col. 5:27-30, 35-37, 55-56; Col. 6:13-16; Col. 7:8-10, 20-26, 30-34; Figures 1-8.

Similarly, the specification does not describe a concavity in the terms of a "hollow" in which the keyboard is placed. Rather, the specification repeatedly refers to a keyboard "within" the concavity, and all drawings of the invention depict a keyboard sunk down inside a concave area, below the surface of the housing. See '322 Patent, Figures 4-6. For example, in Figures 4 and 5 of the specification, the keys are located inside the concavity and do not form the outer boundary of the concavity or rise above the concave area. If the invention is designed for key actuation by the thumb "within the concavity," then the keys must be within concavity of the housing and below its surface. Id. Col. 3:22-24. Thus, plaintiff's construction of an opening hollow in which a keyboard is contained is not supported by the claim language or the specification unless the keyboard is sunk down in the "hollow" so that the keys are below the surface of the housing.

Finally, prosecution estoppel prevents precludes a construction of the claim that encompasses a "concavity" formed by the keys of the keyboard. The ‘322 patent was the subject of a patent interference, a proceeding designed to resolve the question of invention priority when more than one applicant seeks a patent on substantially the same invention. Stevens v. Tamai, 366 F.3d 1325, 1330 (Fed. Cir. 2004). The patent interference involved a patent application called “Hand Held Encoding Instrument” by Goddard. Davis Decl., Exs. 5, 7. To invoke the interference and determine who first invented the device claimed in the ‘322 patent, Goddard copied Claims 1 through 3 and 5 of the ‘322 patent into his patent application.

In particular, the Goddard Claim 33 described a “keypad and handle combination of claim 32 wherein said keypad surface is substantially concave.” Davis Decl., Ex. 8, p. 5. Declaration of Chin See Ming (Ming Decl.), Ex. 5, p. 5. Gambaro argued that the Goddard Claim 32 corresponded to the concavity recited in Claim 1 of the '322 patent: "Gambaro argues that the limitation of a portion of the keypad position toward the thenar eminence facing portion of the hand . . . is an inherent feature of the 'concave keypad surface' of Gambaro Claim 1." Davis Decl., Ex. 8, p. 5. The Administrative Patent Judge disagreed:

> Gambaro’s claim 1 recites “a concavity in said housing . . . and a cluster of keys forming a keyboard in said concavity.” Gambaro’s claim does not recite a “concave keypad surface" . . . . That the keyboard is positioned

> in the concavity does not mean that the keyboard itself conforms to the concavity.

Id. Ex. 8, pp. 5-6; Ming Decl., Ex. 4, pp. 5-6. "[B]ecause the interference proceedings are part of the public record and shed light on the meaning of the claims, it is proper to rely on the record of those proceedings in construing the claims." Phillips Petroleum Co. v. Huntsman Polymers Corp., 157 F.3d 866, 872 (Fed. Cir. 1998).

Gambaro also distinguished the prior art keyboard of the Einbinder patent, U. S. Patent No. 4,332,493, which disclosed a concave slope of the keys. "A patentee may not write narrow claims for allowance by the PTO and subsequently attempt to broaden the claims in court by using the doctrine of equivalents." PSC Computer Prods., Inc. V. FoxComm Int'l Inc., 355 F.3d 1353, 1357 (Fed. Cir. 2004). I therefore reject plaintiff's construction of concavity as a depression formed by the keys or the keyboard.

Instead, I construe this phrase to mean that the concavity must be formed by a depression in the housing of the device, and that all keys comprising the keyboard must be contained entirely within the concave area and sunk below the surface of the housing, so that the thumb movement occurs within the concave area.

3. Each of the Plurality of Keys in Said Cluster Being Selectively Actuable via Mixed Lateral, and Slight Endo, Translation of a Thumb Within Said Concavity

Nokia argues that the phrase "mixed lateral and slight endo translation of a thumb" should be construed to mean that each key

must be individually actuated by "side-to-side and slight forward movement . . . with the thumb remaining at least fully extended during all movement so that there is no inward, closing bending of he thumb." Nokia's Memorandum in Support of Motion for Summary Judgment of Non-Infringement, p. 19. Nokia contends that the claim language describes a forward and/or downward direction into the concavity rather than an inward bending the thumb to actuate any of the keys with the thumb tip. '322 Patent, Col. 6:30-32, 34-38. In other words, Nokia argues that the '322 patent teaches a dialing method whereby the thumb remains fully extended while actuating keys.

All defendants further argue that the phrase "translation of a thumb within said concavity" means that the thumb must be within the concavity when actuating the keys. "During normal operation of the device, the portion of a user's thumb that actuates each of these keys must remain contained within the space defined by concavity during the entire motion of actuating the key." Microsoft's Memorandum in Support of Motion for Summary Judgment of Non-Infringement, p. 12; see also Saitek's Memorandum in Support of Motion for Summary Judgement of Non-Infringement, p. 14. ("During actuation of the keys, the thumb must remain within an area sunk below a surface of the housing."); see also Nokia's Memorandum in Support of Motion for Summary Judgment of Non-Infringement, p. 20.

Plaintiff originally construed endo to mean "generally within

a defined area or along the long axis of an elongate object or thing," a construction that supports Nokia's contention that the thumb must move in an elongate position. Second Supplemental Declaration of James Stewart, Ex. 2, p. 6. However, in opposing Nokia's construction, plaintiff now argues that endo "includes slight extension, slight retraction, and slight flexture of the joints, consistent with the '322 specifications," i.e., that "slight endo movement" includes a downward and inward retraction or bending of the thumb. Plaintiff's Memorandum in Opposition to Defendants' Motions for Summary Judgment, p. 34. Thus, the crux of the parties' dispute over claim construction is whether and to what extent the claim language or patent specification require a particular movement of the thumb.

I agree with Nokia that reference to the specification is necessary to determine the meaning of endo, given that this term generally means "within" when used as a prefix. See Davis Decl., Ex. 11 (Webster's Third New International Dictionary, p. 748). As described in the specification, the distinguishing feature of the claimed invention is that it minimizes finger, thumb, and wrist motion to alleviate "keyboard motion 'injuries.'" '322 Patent, Col. 2:58. Thus, the object of the claimed invention "is to provide a thumb-actuable key cluster which is readily usable, by temporary movement of the thumb, to a key-actuation position on the device without having to release the user's grip on the device."

Id. Col 3:7-11. To achieve this result, the keyboard is located in a concavity at the "key-actuation position." Id. Col. 3:16-20.

The specification explains that the "thumb-actuated keyboard . . . requires only a small amount of movement of the user's thumb to selectively actuate any of the keys of the keyboard. The thumb need only be moved within a small cone of motion . . . in order to actuate any individual key." '322 Patent, Col. 6:57-64. As described in the specification, Figure 4 depicts a thumb positioned above the key-actuation position, i.e., above the keyboard within the concavity, with arrows pointing in the intended movement of the thumb to actuate certain keys. Id. Col. 6:19-43 ("Small arrows . . . indicate generally the direction in which actuating force must be applied to keys . . . ."). The arrows indicate a forward and downward movement of the thumb within the concavity, with no suggestion of a thumb flexture or retraction. "[T]he thumb . . . is rotated downwardly onto the keyboard. In that position, each key in the keyboard can be actuated by slight gestural movements of the thumb." See '322 Patent, Col. 6:26-29, Figure 4.

Finally, the plain language of the claim discloses the placement of keys so that they are actuated by movement of the thumb "within" the concavity. The specification supports this construction: "In its preferred form, the concavity on the housing of the devices contains a plurality of keys . . . to permit selective actuation by minimal movement of a thumb positioned in

the concavity." Id. Col. 3:26-27, 30-33 (emphasis added).

Therefore, based on the description and drawings in the specification, I construe this phrase as meaning that the device must allow for actuation of the keys within the concavity by the thumb using slight, forward and downward gestural motion, so that the thumb movement is within the concavity. See Carman Indus., Inc. v. Wahl, 724 F.2d 932, 939 n.13 (Fed. Cir. 1983) ("Utility patents afford protection for the mechanical structure and function of an invention . . . .").

B. Infringement

Plaintiff claims that Microsoft's Sidewinder joysticks and several models of Saitek joysticks infringe claims 1, 2, 3, and 5 of the '322 patent, and that Nokia cellular phones 3560, 3595, 6200, and 6820 infringe claims 1, 2, 3, and 4.[4] Defendants Microsoft, Saitek, and Nokia all move for summary judgment of non-infringement.

1. Microsoft and Saitek Products

Microsoft and Saitek argue that their joysticks do not contain two elements of Claim 1: 1) that the device be "hand held," and 2) that the device contain a keyboard within a concavity in the housing of a device.

---

[4]Plaintiff originally claimed infringement by three models of Nokia phones: 3650, 3660, and 6220. Plaintiff withdrew infringement allegations against models 3650 and 3660 and admits that model 6220 is not made, used, sold, offered for sale, or imported into the United States. See Davis Decl., Ex. 26, p. 2.

a. Hand-Held Device

Microsoft and Saitek argue that plaintiff cannot establish infringement of Claim 1, because the Sidewinder and Saitek joysticks are not "hand-held" devices. The Microsoft Sidewinder and Saitek joysticks are operated by pivoting the joystick handle - relative to a stable base - to move a cursor on a computer screen or otherwise control a program. Microsoft and Saitek explain that pivotal control is the primary function of the joysticks and is what separates a joystick from other types of data entry devices. Thus, a stable surface or a second hand is required for proper functioning.

I agree that plaintiff cannot establish literal infringement of this claim element, because neither the Sidewinder nor the Saitek joysticks are "hand-held devices" designed to be operated in one hand. Although the "stick" part of the joystick might be grippable by the fingers with the thumb free to reach the keys, the base must be held in another hand or placed on a surface for the joystick to be operable. Even plaintiff's so-called expert agrees that the Sidewinder and Saitek joysticks would not function effectively if gripped and suspended in the air by one hand. Goff Decl., Ex. 22, pp. 195-96.[5]

[5]The hesitates to call Mr. Stewart an expert in this case; he is not a person of ordinary skill in the field of the art, and he is not qualified to render opinions as to the engineering of ergonomic keyboards. See Goff Decl. in Opposition to Plaintiff's Motion for Summary Judgment, Ex. 2 (Stewart Dep., p. 14).

Microsoft and Saitek further argue that plaintiff cannot rely on the doctrine of equivalents under the "all-elements" rule, because the hand-held limitation of Claim 1 would be eliminated entirely if extended to cover the Microsoft Sidewinder and Saitek joysticks. I agree. Warner-Jenkinson Co., 520 U.S. at 29; Searfoss v. Pioneer Consolidated Corp., 374 F.3d 1142, 1151 (Fed. Cir. 2004) (claim requiring "direct" connection could not be equivalent to accused "indirect" connection); Moore U.S.A, Inc. v. Standard Register Co., 229 F.3d 1091, 1106 (Fed. Cir. 2000) (claim requiring that strips of adhesive extend to the "majority" of lengths could not be equivalent to the accused's device that extended only to 47.9% of the lengths).

Moreover, plaintiff presents no evidence that the differences between the joysticks and the claimed element are insubstantial, or that the joysticks perform "substantially the same function in substantially the same way to obtain the same result" as the hand-held limitation. Warner-Jenkinson Co., 520 U.S. at 39. Plaintiff cannot rely on conclusory statements; rather, it must establish substantial equivalence by a preponderance of the evidence. Lemelson, 752 F.2d at 1547, 1551.

Stewart has not performed work in the field of ergonomics, has no education or training in ergonomics, does not subscribe to publications dealing with ergonomics, or attend conferences dealing with ergonomics. The sum total of Stewart's experience in the field appears to be choosing the proper chair at his workplace. Id. (Stewart Dep., pp. 14-15).

b. Concavity in Housing and Keyboard Within Concavity

Second, Microsoft and Saitek argue that none of the joysticks contain a keyboard within a concavity in the housing of the device.

The Microsoft Sidewinder joystick handles each have a broad top surface that faces toward the user's thumb when the handle is gripped by the user. The surface is almost imperceptibly curved from side to side, resembling a flat, shallow channel. Located within the shallow channel are four keys, including a miniature joystick key and three other keys. Several ridges surround the channel and the keys, and the top of the miniature joystick extends beyond the channel space and the other keys raise above the surface of the channel. Goff Decl., Ex. 12; Physical Exs. A, B.

Upon viewing the accused Sidewinder joysticks, it is clear that there is no "concavity" in the housing, no keyboard "within" the concavity, and no keys actuable by slight, gestural thumb motion within a concavity. The alleged "concavity" is actually a channel on which the thumb keys are located; it is not a bowl-shaped depression sunk below the surface of the housing. See id. Even if the court construed concavity to cover the shallow channel of the Sidewinder joysticks, the keys are not "within" a concavity, because they extend beyond the limits of the channel.

Plaintiff maintains that - viewed from above – all four keys lie within the concavity. In other words, plaintiff would have the court look to the Sidewinder joysticks from a two-dimensional

viewpoint. Notwithstanding the fact that this argument would render "concavity" a nullity, the Sidewinder joysticks are not two-dimensional devices. Plaintiff also argues that it is irrelevant that the miniature joystick key extends beyond the limits of the "channel," because an accused device may have additional features not present in the patented device, i.e., additional keys not within the concavity. Regardless, plaintiff must still establish that the accused device includes all elements of the claimed device. Laitram Corp. v. Rexnord, Inc., 939 F.2d 1533, 1535 (Fed. Cir. 1991). Here, none of the thumb keys are contained within any "concavity" in the housing of the joysticks.

Like the Sidewinder joysticks, the Saitek joysticks each have a handle protruding upward from the center of the housing base. Keys are positioned on top of the handle and generally form a wide curve where the thumb actuates the keys, with the keys extending above the upper end of the joystick handle. See Physical Exs. 30-36. I find that no Saitek joystick model contains a concavity in the housing or a keyboard within a concavity. In some models the keys are attached to the joystick housing by a hinge. In others, the keys are located on top of the joystick handle, and the keys are shaped to formed a curved surface. In either case, no concavity is present in the device housing and no keyboard is located within a concavity. See Ex. Physical Exs. 30-32.

Plaintiff argues that the shape of the Saitek joystick keys

surfaces define a concavity above the keys, and that the Saitek joystick keys constitute a portion of the housing. Plaintiff's argument rests on its construction of the term "concavity" as that formed by key tops, a construction the court has rejected. Moreover, plaintiff fails to explain how a "concavity" can be both a shallow channel on which keys are located as well as a slope formed by the keys. Regardless, I find that neither the Microsoft nor the Saitek joysticks contain a concavity in the housing or a keyboard within a concavity. It goes without saying that the joysticks do not include keys actuable by slight, gestural thumb movement within a concavity.

Infringement likewise cannot be established under the doctrine of equivalents, because to so find would vitiate these claimed elements. Moreover, plaintiff presents no evidence that the joysticks are substantially similar to the '322 patent device in terms of form, function, or result. Texas Instruments Inc., 90 F.3d at 1566.

Moreover, plaintiff is estopped from relying on the doctrine of equivalents, because a "concavity in keytop surface" is found in the prior art of the Einbinder patent as disclosed in the '322 Patent. '322 Patent, Col. 2:34-36. "It is well settled law that a patentee cannot assert a range of equivalents that encompasses the prior art." Interactive Pictures Corp. v. Infinite Pictures, Inc., 274 F.3d 1371, 1380 (Fed. Cir. 2001). "[I]t would not be

equitable to allow a patentee to claim a scope of equivalents encompassing material that had been previously disclosed by someone else, or that would have been obvious in light of others' earlier disclosures." Tate Access Floors, 279 F.3d at 1367. Thus, because the Einbinder patent teaches a concave keypad surface, plaintiff cannot rely on the doctrine of the equivalents to establish infringement of the '322 claims by the Saitek joysticks. "[O]ne cannot, in the course of litigation and outside of the PTO, cut and trim, expanding here, and narrowing there, to arrive at a claim that encompasses an accused device, but avoids the prior art." Streamfeeder, LLC v. Sure-Feed Systems, Inc., 175 F.3d 974, 983 (Fed. Cir. 1999); Marquip, Inc., 198 F.3d at 1367 ("Based on the fundamental principle that no one deserves an exclusive right to technology already in the public domain, this court has consistently limited the doctrine of equivalents to prevent its application to ensnare prior art.").[6]

Accordingly, plaintiff fails to establish that the Microsoft and Saitek joysticks are hand-held devices or that any of them contain a concavity in the housing for placement of a keyboard actuable by slight gestural motion of the thumb. Therefore, I

[6]Microsoft also argued that application of the doctrine of equivalents would ensnare the prior art aircraft joysticks owned by the McDonnell-Douglas Corporation (the walker and Marshall patents). However, the court has rejected plaintiff's doctrine of equivalence arguments and need not determine whether the Marshall or Walker patents constitute prior art.

grant Microsoft's and Saitek's motions for summary judgment of non-infringement of the '322 patent.

2. Nokia Products

Nokia argues that its accused models of phones do not contain: 1) a concavity in the housing or a keyboard within the concavity; or 2) keys in that are "selectively actuable via mixed lateral and slight endo" movement of the thumb within the concavity. Nokia maintains that none of the accused phones contains a "concavity" in the phone housing at the "key actuation position" into which a user can place a thumb to selectively acuate the keyboard within the concavity, and therefore plaintiff cannot establish infringement of the '322 patent.

a. Keyboard Within Concavity

Like Microsoft and Saitek, Nokia argues that plaintiff cannot show infringement of Claim 1, because none of its phones have a keyboard within a concavity, i.e., a bowl-like depression in the housing of the phone. All of the accused Nokia models of phones are designed in a similar fashion; each has a cover that fits over the keypad and internal mechanisms of the phones. The cover has an opening for the keypad, so the keys of the keypad rise slightly above the housing cover. See Davis Decl., Ex. 15, pp. 1-5; Nokia Inc. Demonstrative Exhibits, pp. 11-13, 15-18, 20-22, 24-26.

To establish infringement, plaintiff relies on its alternative constructions of "concavity" as either an opening or "hollow" in

the phone intended for the placement of the keypad or as a depression formed by the keypad surface.

I do not find that an opening in the cover of the Nokia phones meets the claimed limitation of "concavity" as construed by the court. An opening in a phone cover is not a "depression" sunk down below the surface of the housing. Likewise, I find that none of the phones contain a concavity by virtue of the slight depression formed by the keys or keypad surfaces, because the concavity must be in the "housing" of the device and the keypad must be located "within" the concavity to accommodate thumb actuation of the keys. If the keypad forms the concavity, the keys are not "within" the concavity, and the keypad cannot be activated by moving the thumb within the concavity.

Plaintiff responds that even if keys on the accused Nokia phones are not within the "concavity," it is irrelevant, because the presence of additional elements will not avoid infringement so long as the elements of the claim are met. However, plaintiff appears to be missing the point of Nokia's argument - the claim requires the keyboard to be "within" the concavity.

Plaintiff also relies on the doctrine of equivalents, arguing that the "concavity" formed by the surface of the keys is the functional equivalent of keys within a concavity. Plaintiff maintains that application of the doctrine would not "vitiate" the element of a "concavity in said housing" and a keyboard "within

said concavity," because the concavity formed by the keyboard allows the thumb to actuate the keys with light movements within the concavity.

Plaintiff, again, fails to provide any evidence that the accused phones perform the same function substantially the same function in substantially the same way with substantially the same result. Regardless, for the reasons explained above, plaintiff is estopped from relying on the doctrine of equivalents to cover the sloped surface of the keypad, because to do so would ensnare the prior art Einbinder patent.

b. Endo Translation of Thumb

Nokia contends that the keyboard on the accused phones are not "selectively actuable via mixed lateral, and slight endo translation of a thumb within said concavity," because the accused Nokia phones are designed to be dialed with the tip of the thumb or the thumbnail through an inward bending of the thumb followed by a downward movement into the phone. Davis Decl., Exs. 22, 23, 24, 25 (expert affiants opining that Nokia phones are not designed for the dialing method described in '322). In contrast, Nokia argues that the '322 patent is designed to be dialed using side-to-side and forward translations of an elongate thumb within the housing's concavity. See '322 Patent, Col 6:11-16, 30-42; Figures 4, 5 and 6. Nokia therefore argues that the accused phones do not perform the same function or teach the same dialing method as disclosed in

the ‘322 patent.

Plaintiff disagrees, arguing that the structure of the Nokia phones support the dialing method of the '322 patent and therefore can be found to infringe. I find that whether the Nokia phones are support the slight endo translation of the thumb as described in the '322 patent specification is ultimately a question of fact. Regardless, the keyboard is not actuable via translation of the thumb within the concavity, because the phones do not contain a keyboard within a concavity as construed by the court. Therefore, plaintiff fails to establish infringement of Claims 1, 2, 3, and 4 by the Nokia phones, and Nokia’s motion for summary judgment of non-infringement is granted.

III. INVALIDITY

Defendants Microsoft and Saitek seek a declaratory judgment of invalidity of the ‘477 and ‘322 patents and move for summary judgment on this ground. Nokia also moves for summary judgment on its affirmative defense of invalidity, but it did not assert a counterclaim for declaratory judgment. Therefore, the court’s finding of non-infringement renders the question of invalidity moot with respect to Nokia’s affirmative defense. See Cardinal Chem. Co. v. Morton Int’l, Inc., 508 U.S. 83, 93-94, 95-96 (1993).

Microsoft also moves for summary judgment of invalidity of the ‘477 patent if the court adopted plaintiff’s construction of the

patent claims.[7] However, the court declined to adopt plaintiff's proffered constructions; therefore, Microsoft's motion for summary judgement of invalidity of the '477 patent is rendered moot. Therefore, the court considers defendants' invalidity motions that do not rely on the court's construction of claim terms: defendants' joint motion for summary judgment of invalidity, Microsoft's Motion for Summary Judgment of Invalidity of the '322 Patent, and Saitek's Motion for Summary Judgment of Invalidity of the '322 patent.[8]

A patent is invalid if "the invention was patented or described in a printed publication in this or a foreign country or in public use . . . more than one year prior to the date of the application for patent." 35 U.S.C. § 102(b). A patent is presumed valid, and the burden of proving invalidity by clear and convincing evidence rests with the challenger. Id. § 102(b); United States v. Telectronics Inc., 857 F.2d 778, 785 (Fed. Cir. 1988). All defendants assert invalidity on grounds of public use, and

---

[7]Specifically, Microsoft argued that two prior art keyboard designs, the Retter and Stucki patents, anticipated the '477 patent if the court adopted plaintiff's construction of the claims to cover the Strategic Commander.

[8]Originally, the court believed that Saitek's Motion for Summary Judgment of Invalidity was also brought in the event the court adopted plaintiff's claim construction. After further consideration of Saitek's motion, I find that it is limited with respect to the "Hot Gun Grip." In an abundance of caution, the court considers Saitek's motion with respect to its argument that the Tomy Car Toy anticipates the '322 Patent.

Microsoft and Saitek assert invalidity on grounds of anticipation by prior art.

A. Public Use

Defendants argue that the '477 and '322 patents are invalid, because the patents were filed more than one year after public use of Gambaro's "Cherry Model 5" keyboard (Cherry Model). Defendants that Gambaro's 1987 disclosures of the Cherry Model to third parties for commercial purposes constitutes "public use" within the meaning of the Patent Act, and therefore the '477 and '322 patents are invalid.

Public use is a question of law based on underlying facts. Manville Sales Corp. v. Paramount Sys., Inc., 917 F.2d 544, 549 (Fed. Cir. 1990). The party with the burden of proof must show that "the subject of the barring activity met each of the limitations of the claim, and thus was an embodiment of the claimed invention." Scaltech Inc. v. Retec/Tetra, L.L.C., 178 F.3d 1378, 1383 (Fed. Cir. 1999). Further, the moving party must show that the device was in public use. Id.

The '477 patent has an effective filing date of June 6, 1991. The '322 patent, with the added feature of a hand-held device, has an effective filing date of January 11, 1993. Plaintiff has admitted that the Cherry Model embodies the '477 and '322 patent claims. See Davis Decl., Ex. 17, pp. 19, 20 (Gambaro Dep., pp. 138-39, 287). Thus, June 6, 1990 is the critical date by which

defendants must establish public use of the Cherry Model to invalidate the '447 patent, and January 11, 1992 is the critical date to establish invalidity of the '322 patent.[9]

Public use "includes any use of the claimed invention by a person other than the inventor who is under no limitation, restriction or obligation of secrecy to the inventor." Minnesota Mining & Mfg. Co. v. Chemque, Inc., 303 F.3d 1294, 1301 (Fed. Cir. 2002); see also In re Smith, 714 F.2d 1127, 1134 (Fed. Cir. 1983). Thus, the court must consider "the nature of the activity that occurred in public; the public access to and knowledge of the public use; [and] whether there was any confidentiality obligation imposed on persons who observed the use . . . among other factors Allied Colloids Inc. v. Am. Cyanamid Co., 64 F.3d 1570, 1574 (Fed. Cir. 1995).

The court must also consider policies underlying the public use doctrine, which include "discouraging the removal of inventions from the public domain which the public justifiably comes to believe are freely available, prohibiting an extension of the period for exploiting the invention, and favoring prompt and widespread disclosure of inventions." Manville Sales, 917 F.2d at 550 (internal citation and quotation marks omitted). The "onus is

[9]In this proceeding, plaintiff denies that the Cherry Model embodies Claims 5, 6 and 8 of the '477 patent, because it does not have key clusters mounted for "selective, positional adjustment." However, Gambaro's admissions are binding on plaintiff.

on . . . the inventor, to protect the confidentiality of his invention and its use by others before the critical date." Netscape Communications Corp. v. Konrad, 295 F.3d 1315, 1323 (Fed. Cir. 2002).

The Cherry Model was developed and reduced to practice by Gambaro as of February 22, 1987. Davis Decl., Ex. 17, pp. 18-19 (Gambaro Dep. pp. 137-38). Shortly thereafter, Gambaro disclosed and demonstrated the Cherry Model to Keith Coulter, his business partner, Kathie Roberts, a friend, and potential investors Bill Marx, Loren Ray, Doug Stroh, Jack Hull, and Bill Osborne, among other investors. See Davis Decl., Ex. 17 (Gambaro Dep. pp. 140-41, 285, 472-73, 475-76); Ex. 34, pp. 1, 2, 5, 7-10; Declaration of Keith Coulter (Coulter Decl.). Coulter also disclosed the Cherry Model to Sheila Lanier on June 25, 1990 for the purpose of conducting typing tests. Although many third parties entered into two-year non-disclosure agreements to keep the Cherry Model confidential, the non-disclosure agreements signed by Marx, Ray, Hull, and Osborne expired in 1989. Davis Decl., Ex. 34, pp. 1, 2, 5, 7-10.

According to Gambaro's deposition testimony, almost all disclosures of the Cherry Model were for the purposes of commercial evaluation and the procurement of investment capital. Davis Decl., Ex. 17, pp. 11-12, 21, 22, 33 (Gambaro Dep., pp. 107-08, 140-41, 287). Specifically, Gambaro disclosed the Cherry Model to Coulter

to recruit potential investors, generate commercial interest in Gambaro's keyboards, and determine their marketability. Id. Ex. 17, pp. 9-10, 25-28, 29-30 (Gambaro Dep., pp. 105-07, 144-47, 272-73). Coulter Decl., p. 2. Defendants emphasize that these activities were not made known to the PTO.

Plaintiff argues that defendants have merely shown a series of disclosures rather than "public use" of the Cherry Model within the meaning of § 102(b). Plaintiff maintains that "public use" requires commercial use of an invention that is fully commercialized, i.e., for sale or ready to be sold. Plaintiff argues that the display and presentation of the Cherry Model was merely to prepare for commercialization and does not constitute "literal" or actual use to fall within the public use prohibition. Plaintiff provides little support for this argument, and I do not find it persuasive.

The public use doctrine does not require that the invention be a fully commercialized product or made available for sale. 35 U.S.C. § 102(b) (a patent is invalid if "in public use or on sale in this country" for more than one year before its effective filing date) (emphasis added). Further, public use does not require "actual" or "literal" use. Watson v. Allen, 254 F.2d 342, 345 (D.C. Cir. 1958) (public use has "extraordinarily broad meaning. Although disclosures constituting "bona fide experimental purpose" are excluded from the public use bar, the amount and type of public

use under § 102(b) is *de minimus*. Grain Processing Corp. v. American-Maize Products Co., 840 F.2d 902, 906 (Fed. Cir. 1988). Finally, there can be no experimental use of an invention once it has been reduced to practice. In re Smith, 714 F.2d at 1134-35; see also New Railhead Mfg. L.L.C. v. Vermeer Mfg. Co., 298 F.3d 1290, 1297-98 (Fed. Cir. 2002).

Plaintiff concedes that the Cherry Model was reduced to practice as of February 1987. Thus, no experimental use occurred after this date. Further, Gambaro and Coulter admit that the Cherry Model was shown or demonstrated to potential investors, and that the investors sometimes "handled" the keyboard. Coulter Decl., p. 2. A demonstration by the inventor or a third party may invoke the public use bar under § 102(b). See Eolas Techn. Inc. v. Microsoft Corp., 399 F.3d 1325, 1334 (Fed. Cir. 2005) (third-party demonstration to two employees without confidentiality agreements was a public use). Plaintiff also admits that Lanier used the Cherry Model on June 25, 1990 to see how fast she could type. Netscape Communications, 295 F.3d at 1322 ("Konrad's demonstration was geared more toward making the remote database object more commercially attractive, with endorsements from outside technical people, than for experimental use purposes."). Therefore, I find that the Cherry Model was disclosed for public use more than one year before the '477 or '322 patents were filed.

Plaintiff next argues that the non-disclosure agreements

created an obligation of secrecy, and therefore the public use doctrine does not render the '477 or the '322 invalid. Plaintiff maintains that the disclosures to potential investors were not "public," because the third parties were bound to keep the Cherry Model confidential. Finally, plaintiff contends that while it is "theoretically" possible that a third party used the Cherry Model, defendants fail to produce clear and convincing evidence that such use occurred.

It is undisputed that several third parties signed non-disclosure agreements and agreed to keep the Cherry Model confidential. However, the term of most of the agreements expired after two years, in 1989 – two years prior to the filing of the '477 patent. Accordingly, once the confidentiality agreements expired, the Cherry Model disclosure entered the public domain. Notably, Gambaro's business partner, Coulter, was not subject to the non-disclosure agreement when he disclosed the Cherry Model to spur commercial interest in it and other Gambaro keyboards. Davis Decl., Ex. 17 (Gambaro Dep., pp. 25, 105, 107-08).

Regardless, "[t]he presence or absence of a confidentiality agreement is not dispositive of the public use issue, but 'is one factor to be considered in assessing all the evidence.'" Bernhardt, L.L.C. v. Collezione Europa USA, Inc., 386 F.3d 1371, 1379 (Fed. Cir. 2004) (quoting Moleculon Research Corp. v. CBS, Inc., 793 F.2d 1261, 1266 (Fed. Cir. 1986)); see also Kinzenbaw v.

Deere & Co., 741 F.2d 383, 390 (Fed. Cir. 1984) ("While secrecy is one factor to be considered in determining whether the use was experimental or public, secrecy alone does not necessarily negate public use.") (citations omitted). Here, I find that the totality of the circumstances support application of the public use doctrine.

Importantly, a confidentiality agreement will not preclude application of the public use doctrine, if the device was disclosed for commercial purposes. "A commercial use is a public use even if it is kept secret." Kinzenbaw, 741 F.2d at 390. In order to be commercial, the use must provide some type of commercial advantage to the inventor. Id. at 391; D.L. Auld Co. v. Chroma Graphics Corp., 714 F.2d 1144, 1147 (Fed. Cir. 1983) (the purpose of the public use and on sale bar "is to preclude attempts by the inventor or his assignee to profit from commercial use of an invention for more than a year before an application for patent is filed"). As explained by the esteemed Judge Learned Hand:

> It is indeed true that an inventor may continue for more than a year to practice his invention for his private purposes of his own enjoyment and later patent it. But that is, properly considered, not an exception to the doctrine, for he is not then making use of his secret to gain a competitive advantage over others; he does not thereby extend the period of his monopoly.

Metallizing Eng'g Co. v. Kenyon Bearing & Auto Parts Co., 153 F.2d 516, 520 (2d Cir. 1946).

Here, Gambaro disclosed an embodiment of the '477 and '322

patents after the Cherry Model was reduced to practice for the purpose of commercial evaluation and procurement of capital investment. The disclosures were intended to convince third-parties to invest in the device, and Gambaro used some of the investment funds for personal income. Davis Decl., Ex. 17 (Gambaro Dep. 107-08, 466-67, 475-76. "[I]t is a condition upon an inventor's right to a patent that he shall not exploit his discovery competitively after it is ready for patenting; he must content himself with either secrecy, or legal monopoly." Metallizing Eng'g Co., 153 F.2d at 520. To avoid invalidity by public use, Gambaro was required to file patents of his invention within one year after public use of the Cherry Model. Gambaro failed to do so, and now the '477 and the '322 patent are invalid.

B. Obviousness of the '322 Patent

Defendants next argue that the '322 patent is invalid for obviousness as well as for public use.

A claimed invention is unpatentable if the differences between it and the prior art "are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art." 35 U.S.C. § 103(a); Graham v. John Deere Co., 383 U.S. 1, 13 (1966). The relevant inquiry is whether there is a reason, suggestion, or motivation in the prior art that would lead one of ordinary skill in the art to combine the references, and that would also suggest a reasonable

likelihood of success. See Ruiz v. A.B. Chance Co., 234 F.3d 654, 664 (Fed. Cir. 2000).

During the prosecution of the ‘322 patent, the PTO found that the invention disclosed in the ‘322 patent would be "obvious" in light of the ergonomic keyboard of the ‘447 patent. Davis Decl., Ex. 3. Thereafter, Gambaro filed a terminal disclaimer, which forfeited the term of the ‘322 patent after the expiration of the ‘477 patent. Id. Exs. 3, 4. Given that Gambaro has admitted that the Cherry Model embodies the claims of the '477, the Cherry Model is prior art to the '477 patent and thereby renders the '322 patent obvious based on Gambaro’s admissions.

C. Anticipation by Prior Art

Microsoft and Saitek argue that the ‘322 patent is invalid as anticipated by prior art. Microsoft argues that two design patents for telephone handsets contain each element of the recited in Claims 1, 2, 3, and 5 of the ‘322 patent claims. Saitek argues that the Tomy Car Toy contains each element of Claim 1 of the '322 patent. Both defendants emphasize that these prior art references were not disclosed to the PTO when Gambaro sought to obtain the ‘322 patent.

Invalidity based on anticipation entails a two-step analysis. First, the court determines whether each reference or shown in a “printed publication” more than one year before the '322 patent was filed. 35 U.S.C. § 102(b). Printed publications include

catalogues, brochures, or instructions that are distributed to the public. See Mazzarie et al. v. Rogan, 323 F.3d 1000, 1005 (Fed. Cir. 2003). Second, the court compares the properly construed claims to the prior art. Helifix Ltd. v. Blok-Lok, Ltd., 208 F.3d 1339, 1346 (Fed. Cir. 2000). A claim is anticipated if every limitation is described in the prior art reference. Id.

1. The Foreman and Deighan Patents

Microsoft argues that two prior art references - the Foreman and Deighan Patents - include all limitations of Claim 1 of the '322 patent, and therefore anticipate the '322 patent, regardless of whether the '322 patent claims are construed to encompass the Microsoft joysticks.

United States Design Patent No. D258,061 to Foreman (the Foreman Patent) was issued on January 27, 1981, more than ten years before the application of either the '477 or the '322 patents. Goff. Decl., Ex. 13. United States Design Patent No. D303,250 to Deighan (the Deighan Patent) was issued on September 5, 1989, more than one year prior to the application of either the '477 or the '322 Patent. Goff Decl., Ex. 14. Thus, the remaining issue is whether the Foreman or Deighan patent include all elements of the '322 patent.

A design patent claims an overall design set forth in the accompanying drawings, as opposed to a utility patent, where the function and structure of the invention are described in words.

"Unlike an invention in a utility patent, a patented ornamental design has no use other than its visual appearance, and its scope is limited to what is shown in the application drawings." In re Harvey, 12 F.3d 1061, 1064 (Fed. Cir. 1993) (quotation marks and citation omitted); see also Carmen Indus., 724 F.2d at 939, n.13 ("Utility patents afford protection for the mechanical structure and function of an invention whereas design patent protection concerns the ornamental or aesthetic features of a design.").

The Foreman Patent teaches a design for a telephone transmitter and receiver. The design includes a housing with a grippable portion and a keypad surrounded by a rim located on the back of the earpiece. Goff Decl., Ex. 13, Figures 1 and 5. In addition to ten numeric keys, two "switcher" keys are located at the bottom corner of the keypad. Id. Similarly, the Deighan patent is a design patent that teaches a telephone radio hand set with a grippable handle. The design drawings depict a sunken region on the back of the earpiece where the keypad is located. Goff Decl., Ex. 14.

Plaintiff argues that the device disclosed in the Foreman patent cannot be utilized to perform the '322 patent dialing method, because the rim surrounding the keypad obstructs the thumb movement. Plaintiff further maintains that a flat surface with a rim is not a concavity, and that the "rocker" key of the Foreman design is not a "key" within the meaning of the '322 patent

(contrary to plaintiff's argument with respect to infringement of the '477 Patent by the Strategic Commander). Finally, plaintiff argues that the drawings in the Deighan patents were solely for design and illustrative purpose rather than disclosure of the device.

To establish anticipation, Microsoft must establish that the Foreman and Deighan patents meet each limitation of Claim 1 of the '322 patent. "For a prior art reference to anticipate a claim, the reference must disclose each and every element of the claim with sufficient clarity to prove its existence in the prior art." Motorola Inc. v. Interdigital Tech. Corp., 121 F.3d 1461, 1473 (Fed. Cir. 1997). "Typically, testimony concerning anticipation must be testimony from one skilled in the art and must identify each claim element, state the witnesses' interpretation of the claim element, and explain in detail how each claim element is disclosed in the prior art reference. The testimony is insufficient if it is merely conclusory." Koito Mfg. Co., Ltd. v. Turn Key Tech, LLC, 381 F.3d 1142, 1152 (Fed. Cir. 2004) (quoting Schumer v. Lab. Computer Sys. Inc., 308 F.3d 1304, 1315 (Fed. Cir. 2002). However, expert testimony is not necessarily required if the patent is "easily understandable." Id. at 1152, n.4. Because anticipation is a question of fact, "[s]ummary judgment is proper if no reasonable jury could find that the patent is not anticipated." Telemac Cellular Corp. v. Topp Telecom, Inc., 247

F.3d 1316, 1327 (Fed. Cir. 2001).

Here, Microsoft provided explanatory argument and a comparative claim chart to establish that each claim limitation of the '322 patent was met by the Foreman and Deighan design patents. Although persuasive, I ultimately find that questions of fact exist as to whether the all limitations of Claim 1 are present in the Foreman or Deighan patent.

In particular, the '322 patent teaches a device with "a grippable portion which the permits the device to be held in one hand with the thumb free to move at least temporarily to a predetermine to enable the thumb to actuate keys within the concavity while the device is held" using "slight, gestural motion." In other words, the design drawings of the either the Foreman or the Deighan Design Patents must disclose a device that allows for the thumb to actuate keys with only slight gestural motion. It is not clear from the design drawings whether this claim element is met, and I find that it is inappropriate for summary judgment.

Denial of Microsoft's motion, however, does not preclude judgment in its favor on it counterclaim for invalidity, given my finding that the prior public use of the Cherry Model invalidates the '477 and '322 patents.

2. Tomy Car Toy

Saitek argues that the '322 patent is invalid because the Tomy

Car Toy anticipates all elements of Claim 1. The Tomy Car Toy is a child's car toy activated by a hand controller. The controller includes two keys located in an seemingly concave area in the housing, with child using the hand controller to control the steering direction of the car. The Tomy Car Toy was disclosed in a printed catalogue as of June 1991, more than one year prior to the filing of the '322 Patent. See Declaration of Masaru Tomiyama (Tomiyama Decl.).

Saitek relies primarily on the admission by plaintiff that the Tomy Car Toy recites all elements of Claim 1, except for the "slight endo translation of the thumb." As with the Foreman and Deighan patents, plaintiff maintains that the Tomy Car Toy does not teach the dialing method of the '322 patent.

Saitek responds that the '322 patent is an apparatus patent and as such, the claims disclose what the device is rather than what it does. Saitek emphasizes that while plaintiff may rely on either the structural or functional features of the invention, plaintiff must "show that the prior art structure did not inherently possess the functionally defined limitations of his claimed apparatus." In re Schreiber, 128 F.3d 1473, 1478 (Fed Cir. 1997). Thus, plaintiff cannot simply rely on the functional language of the claimed without also relying on the structural limitations necessary to provide the desired function. Consequently, Saitek argues if plaintiff relies only on the

function of the invention, Claim 1 is invalid under either of plaintiff's definitions.

Although like Microsoft's, Saitek's argument, too, is persuasive and thought-provoking, I find summary judgment inappropriate. Although plaintiff admitted that the Tomy Car Toy contained almost all of the limitations of Claim 1, plaintiff's construction of those terms varies considerably from the court's. Upon review of the Tomy Car Toy, I find that it is a question of fact whether it contains all the limitations of Claim 1. For example, I question whether the Tomy Car Toy contains a keyboard "within" a concavity as construed by the court, given that the key tops of the controller are even with or above the surface of the housing. See Tomiyama Decl., Ex. E. Therefore, Saitek's motion for summary judgment of invalidity is denied on this ground. However, as with Microsoft, the court may still enter judgment in favor of Saitek on its counterclaim of invalidity in light of the court's finding of invalidity of the '322 patent based on prior public use and obviousness.

CONCLUSION

Defendants' Motions for Summary Judgment of Non-Infringement of U.S. Patent No. 5,187,477 and U.S. Patent No. 5,332,322 (docs. 81, 84, 94, 100) are GRANTED. Defendants' Joint Motion for Summary Judgment of Invalidity for Public Use (doc. 87) is GRANTED.

Defendant Microsoft's Motion for Summary Judgment of

Anticipation of U.S. Patent No. 5,332,322 (doc. 75) is DENIED with respect to the Foreman and Deighan patents and DENIED as MOOT in all other respects. Defendant Saitek's Motion for Invalidity of U.S. Patent No. 5,332,322 is DENIED moot with respect to the Hot Gun Grip and DENIED on all other grounds. Defendant Microsoft's Motion for Summary Judgment of Anticipation of U.S. Patent No. 5,187,477, and defendant Nokia's Motion for Summary Judgment of Invalidity (docs. 78, 91, 104) are DENIED as MOOT.

Plaintiff's Motion and Supplemental Motion for Partial Summary Judgment (docs. 25 and 111) are DENIED.

Judgment shall issue in favor of all defendants with respect to plaintiff's claims of Patent Infringement alleged in Counts I through III of the Amended Complaint. Judgment shall issue in favor of defendant Microsoft Corporation on its Counterclaims as alleged in Counts I and II of Microsoft's Amended Answer. Judgment shall issue in favor of defendant Saitek Industries, Ltd. on its Counterclaim for Declaratory Judgment of Invalidity and Non-Infringement as alleged in Saitek's Amended Answer.

IT IS SO ORDERED.

DATED this 6 day of May, 2005.

/s/ Ann Aiken
Ann Aiken
United States District Judge